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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/621,270	07/18/2003	Robert C. Scott	FTIN-3,427	3045

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EXAMINER

FRANK, RODNEY T

ART UNIT	PAPER NUMBER
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2856

DATE MAILED: 05/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/621,270	Applicant(s) SCOTT ET AL.	
	Examiner Rodney T. Frank	Art Unit 2856	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7 and 8 is/are rejected.
- 7) ☒ Claim(s) 6 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "70" has been used to designate both a load cell and a planar beam sensor (see page 9 of the specification, paragraphs 2 and 3). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

2. The disclosure is objected to because of the following informalities: There are many confusing numbering issues in the specification. For example, the one mentioned above with reference to the drawings. There is a similar error, for example on page 10, line 9 where item "100" is called a neck, which appears consistent with the drawings. However, on page 11 line 2, "100" is now called a probe string. Form viewing the drawings, as well as the majority of the specification; it appears that the probe string should be item 110, not 100. Also, item "110" is called a probe string, a temperature probe, and a probe on page 10. It would be beneficial to keep the nomenclature consistent throughout the specification. Also, though these errors were found, others may exist and the examiner feels the applicant should carefully go through the specification and correct any other such errors that may exist.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Legendre et al. (U.S. Patent Number 5,614,672; hereinafter referred to as Legendre). Legendre discloses an apparatus for measuring the liquid contents of a tank. In reference to claim 1, figures 2 and 3 of Legendre show a device for measuring the liquid volume in a tank comprising:

- (a) a load cell positioned adjacent a port in the top wall of the tank (28);
- (b) a modular displacement probe (46) formed in plural discrete detachable segments adapted to be assembled on site, said probe supported by the load cell, and extending down into the tank, the displacement probe having a lower end near the tank bottom whereby the load measured by the load cell gives the apparent weight of the probe when immersed in the liquid contents of the tank (the fact that the probe is modular is disclosed in column 3 lines 9 and 10) ; and
- (c) a suspension mechanism (26) mounted at the tank port for supporting the load cell and the probe.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Legendre.

7. In regard to claim 2, though the use of the joining collar is not explicitly disclosed, the segments of Legendre, as shown in figure 2 all appear to be of equal length and are attached using a threaded means. The means by which the segments are attached (i.e. a joining collar or threads) are taken to be structural equivalents and a mere design choice of the applicant. Further, since the structure of the joining collar is more complicated than the threaded joining means disclosed in Legendre, this is not seen as an improvement nor does it give an unexpected result in view of the prior art of record.

In regard to claim 3, the riser pipe and flange cap structure is clearly shown in the figures of the Legendre reference.

8. Claims 4, 5, 7, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Legendre as applied to claims 1-3 above, and further in view of Kemp (U.S. Patent Number 6,202, 486). Kemp discloses an analog liquid level gauge. Kemp utilizes a probe structure similar to that disclosed in the Legendre reference. However, Kemp also utilizes a probe string with temperature sensors to determine the level of liquid. The motivation to combine the temperature sensors of Kemp with the probe in Legendre is that it is well established that the use of temperature, especially an arrangement where the difference in temperature between sensors located both above and below a liquid surface is used, is a very accurate method of measuring temperature. Therefore, adding the temperature sensors of Kemp to the probe structure of Legendre would yield a more accurate liquid level measure.

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9. In reference to claims 4 and 5, the probe structure described in the claims is clearly shown in view of the Kemp reference with a hollow stainless steel probe with a plurality of temperature sensors extending in the hollow core disclosed in Kemp.

In reference to claims 7 and 8, the combination of Kemp and Legendre would give on of ordinary skill in the art the device as claimed in view of the detailed arguments present above since claim 7 is a combination of claims 1, 4, and 5 above.

Allowable Subject Matter

10. Claim 6 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. The following is a statement of reasons for the indication of allowable subject matter: The universal joint that keeps the load cell at a constant attitude in combination with all other limitations of the independent claim and all intervening claims would be novel in view of the prior art.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Both Carlin et al. (U.S. Patent Number 5,156, 042) and Andrejasich et al. (U.S. Patent Number 4,890,492) disclose hollow liquid level measurement devices with temperature sensors throughout the hollow interior of the probe.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney T. Frank whose telephone number is (571) 272-2193. The examiner can normally be reached on M-F 9am -5:30p.m..

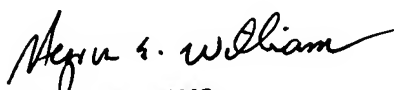
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron E. Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RTF

April 29, 2004


HEZRON WILLIAMS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800